1. A process for manufacturing a compound sintered article, comprising the sequential steps of:

(a) providing a group of mixtures of powdered materials, each member of said group having, after sintering, a functional property that is different from any functional property possessed, after sintering, by any other member of the group;

(b) adding lubricants and binders to all members of said mixtures group, thereby forming a group of feedstocks, all of whose members shrink, after sintering, by amounts that differ from one another by less than about 1%;

(c) in a mold, compression molding a feedstock from said feedstock group, to form a green part;

(d) transferring said green part to a different mold and then injecting into said different mold a quantity of a different feedstock, taken from said feedstock group;

(e) repeating steps (c) and (d), each time using a different mold and a different feedstock, until all members of said feedstock group have been molded, thereby forming a final compound green part;

(f) removing all lubricants and binders from the final compound green part to form a powder skeleton; and

(g) sintering the powder skeleton to form said compound sintered article.

2. The process described in claim 1 wherein said first and second functional properties are selected from the group consisting of magnetic, corrosion resistant, controlled porosity,

high thermal conductivity, high density, high strength, low thermal expansion, wear resistant, high elastic modulus, high damping capacity, good machinability, fatigue resistance, high hardness, high toughness, high melting point, oxidation resistant, easy joinability, and low internal stress .

3. A process for manufacturing a compound sintered article having a cavity, comprising the sequential steps of:

(a) providing a group of mixtures of powdered materials, each member of said group having, after sintering, a functional property that is different from any functional property possessed, after sintering, by any other member of the group;

(b) adding lubricants and binders to all members of said mixtures group, thereby forming a first group of feedstocks, all of whose members shrink. after sintering, by amounts that differ from one another by less than about 1%;

(c) forming a second group of feedstocks that will shrink, after sintering, by an amount that exceeds the amount that any member of said first feedstock group shrinks, after sintering, by at least 10 %;

(d) in a mold, compression molding a feedstock from either feedstock group, to form a green part;

(e) transferring said green part to a different mold and then injecting into said different mold a quantity of a different feedstock, taken from either feedstock group;

(f) repeating steps (d) and (e), each time using a different mold and a different

feedstock, until all members of both feedstock groups have been molded, thereby forming a final compound green part;

(g) removing all lubricants and binders from the final compound green part to form a powder skeleton;

(h) sintering the powder skeleton; and

(i) removing all loose parts, thereby forming the compound sintered article.

4. The process described in claim 3 wherein said functional properties are selected from the group consisting of magnetic, corrosion resistant, controlled porosity, high thermal conductivity, high density, high strength, low thermal expansion, wear resistant, high elastic modulus, high damping capacity, good machinability, fatigue resistant, high hardness, high toughness, high melting point, oxidation resistant, easy joinability, and low internal stress .

5. The process described in claim 3 wherein the removal of loose parts is achieved by mechanical or by chemical means.

6. A process for manufacturing a compound sintered article, comprising:

providing a first mixture of powdered materials, said mixture having, after sintering, a first functional property;

providing a second mixture of powdered materials, said mixture having, after

sintering, a second functional property;

adding lubricants and binders to said first and second mixtures to form first and second feedstocks such that the amount that said feedstocks will shrink after sintering differs one from the other by less than about 1%;

using a first mold, compression molding the first feedstock to form a first green part;

transferring said first green part to a second mold and then injecting into said second mold a quantity of the second feedstock sufficient to form a compound green part;

removing all lubricants and binders from the compound green part to form a powder skeleton; and

sintering the powder skeleton to form said compound sintered article, whereby said first and second functional properties constitute a pair of functional properties selected from the group of functional property pairs consisting of magnetic-corrosion resistant, controlled porosity-high thermal conductivity, high density-high strength, high thermal conductivity-low thermal expansion, wear resistant-high toughness, controlled porosity-high strength, high elastic modulus-high damping capacity, high strength-good machinability, controlled porosity-fatigue resistant, magnetic-non-magnetic, high hardness-high toughness, wear resistant-oxidation resistant, easy joinability-corrosion resistant, and low internal stress-controlled porosity .

7. A process for manufacturing a cutting tool, comprising:

providing a first mixture of powdered materials, said mixture being, after sintering,

suitable for use as a handle;

providing a second mixture of powdered materials, said mixture being, after sintering, suitable for serving as a cutting edge;

adding lubricants and binders to said first and second mixtures to form first and second feedstocks such that the amount that said feedstocks will shrink after sintering differs one from the other by less than about 1%;

using a first mold, compression molding the first feedstock to form a first green part having the shape of a handle;

transferring said first green part to a second mold and then injecting into said second mold a quantity of the second feedstock having the shape of a cutting edge, thereby forming, together with the first green part, a second green part;

removing all lubricants and binders from the second green part to form a powder skeleton; and

sintering the powder skeleton thereby forming the cutting tool

8. The process described in claim 7 wherein said first mixture of powdered materials is selected from the group consisting of iron, all iron-based alloys, carbon steels, low-alloyed steels, and stainless steels).

9. The process described in claim 7 wherein said second mixture of powdered materials is selected from the group consisting of all tool steels, water-hardening steels

(Type W), shock-resisting steels (Type S), cold-work steels (Type O, A, D and H), hot-work steels (Type H), High speed steels (Type T and M), mold steels (Type P), and tungsten carbide.

10. A process for manufacturing a wire die, comprising:

providing a first mixture of powdered materials, said mixture being, after sintering, suitable for use as a handle;

providing a second mixture of powdered materials, said mixture being, after sintering, suitable for serving as a wire drawing die;

adding lubricants and binders to said first and second mixtures to form first and second feedstocks such that the amount that said feedstocks shrink after sintering differs one from one another by less than about 1%;

providing a third mixture of powdered materials and adding thereto lubricants and binders thereby forming a third feedstock that will shrink, after sintering, by an amount that exceeds the amount that said first and second feedstocks shrink, after sintering, by at least 10 %;

using a first mold, compression molding the first feedstock to form a first green part having the shape of a handle;

transferring said first green part to a second mold and then injecting into said second mold a quantity of the third feedstock which is given a cylindrical pin-cushion shape, thereby forming, together with the first green part, a second green part;

transferring said second green part to a third mold and then injecting into said third mold a quantity of the second feedstock that surrounds said cylindrical pin-cushion shaped portion of the second green part, thereby forming, together with the second green part, a third green part;

removing all lubricants and binders from the third green part to form a powder skeleton;

sintering the powder skeleton; and

removing all material that was formed from said third powdered mixture, thereby forming the wire die.

11. The process described in claim 10 wherein removal of all material that was formed from said third powdered mixture is achieved by mechanical or by chemical means.

12. The process described in claim 10 wherein said first mixture of powdered materials is selected from the group consisting of iron, all iron-based alloys, carbon steels, low-alloyed steels, and stainless steels).

13. The process described in claim 10 wherein said second mixture of powdered materials is selected from the group consisting of all tool steels, water-hardening steels (Type W), shock-resisting steels (Type S), cold-work steels (Type O, A, D and H), hot-work steels (Type H), High speed steels (Type T and M), mold steels (Type P), and

tungsten carbide.

14. The process described in claim 10 wherein said third mixture of powdered materials is selected from the group consisting of waxes and thermoplastics.

15. A structure, comprising:

a continuous body that further comprises:

a first part possessing a first functional property,

a second part possessing a second functional property that is different from said first functional property;

said first and second parts having any shape that can be formed by a molding process; and

wherein said first and second functional properties constitute a pair of functional properties selected from the group of functional property pairs consisting of magnetic-corrosion resistant, controlled porosity-high thermal conductivity, high density-high strength, high thermal conductivity-low thermal expansion, wear resistant-high toughness, controlled porosity-high strength, high elastic modulus-high damping capacity, high strength-good machinability, controlled porosity-highly fatigue resistant, magnetic-non-magnetic, high hardness-high toughness, wear resistant-oxidation resistant, easy joinability-corrosion resistant, and low internal stress-controlled porosity.

16. A structure, comprising:

a continuous body, having at least two parts, each such part being optimized to perform a function other than to serve as an attachment medium, said parts having any shape that can be formed by a molding process.

17. The structure described in claim 16 wherein the function that any given part is optimized to perform is selected from the group consisting of magnetic, corrosion resistant, controlled porosity, high thermal conductivity, high density, high strength, low thermal expansion, wear resistant, high elastic modulus, high damping capacity, good machinability, fatigue resistant, high hardness, high toughness, high melting point, oxidation resistant, easy joinability, and low internal stress .

18. The structure described in claim 16 further comprising at least one cavity as part of the structure

19. A cutting tool, comprising:

in one continuous body, a handle and a cutting edge;

said handle having a shape and being composed of a material whereby it is optimized for gripping a cutting edge and for being gripped;

said cutting edge having a shape and being composed of a material whereby it is optimized for cutting; and

no other materials being present at any interface between said handle and said cutting edge.

20. The cutting tool described in claim 19 wherein said handle is selected from the group consisting of iron, all iron-based alloys, carbon steels, low-alloyed steels, and stainless steels).

21. The cutting tool described in claim 19 wherein said cutting edge is selected from the group consisting of all tool steels, water-hardening steels (Type W), shock-resisting steels (Type S), cold-work steels (Type O, A, D and H), hot-work steels (Type H), High speed steels (Type T and M), mold steels (Type P), and tungsten carbide.

22. A wire drawing die, comprising:

in one continuous body, a handle and a wire drawing die;

said handle having a shape and being composed of a material whereby it is optimized for gripping a wire drawing die and for being gripped;

said wire drawing die having a shape and being composed of a material whereby it is optimized for drawing wire; and

no other materials being present at any interface between said handle and said die.

23 The wire drawing die described in claim 22 wherein said handle is selected from

the group consisting of iron, all iron-based alloys, carbon steels, low-alloyed steels, and stainless steels).

24. The wire drawing die described in claim 22 wherein said die is selected from the group consisting of all tool steels, water-hardening steels (Type W), shock-resisting steels (Type S), cold-work steels (Type O, A, D and H), hot-work steels (Type H), High speed steels (Type T and M), mold steels (Type P), and tungsten carbide.